

PATENT COOPERATION TREATY

COPY

From the
 INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

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10-03-05 A06:49

PCTNOTIFICATION OF TRANSMITTAL OF
 INTERNATIONAL PRELIMINARY
 EXAMINATION REPORT

(PCT Rule 71.1)

Date of Mailing
 (day/month/year)**28 SEP 2005**

Applicant's or agent's file reference

5051.620.WO

IMPORTANT NOTIFICATION

International application No.	International filing date (day/month/year)	Priority date (day/month/year)
PCT/US03/39236	10 December 2003 (10.12.2003)	24 December 2002 (24.12.2002)

Applicant

NORTH CAROLINA STATE UNIVERSITY

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices)(Article 39(1))(see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

DOCKET	
By	<u>S.D.</u>
Date	<u>10/3</u>

Name and mailing address of the IPEA/US
 Mail Stop PCT, Attn: IPEA/ US
 Commissioner for Patents
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Authorized officer
Scott D. Priebe, Ph.D.
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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 5051.620.WO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US03/39236	International filing date (day/month/year) 10 December 2003 (10.12.2003)	Priority date (day/month/year) 24 December 2002 (24.12.2002)
International Patent Classification (IPC) or national classification and IPC IPC(7): C12N 15/00, 15/63, 5/00; C12P 21/00; G01N 33/00; C07H 21/04 and US Cl.: 536/23.1, 23.4, 24.1; 435/320.1, 325; 800/3, 21, 8		
Applicant NORTH CAROLINA STATE UNIVERSITY		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

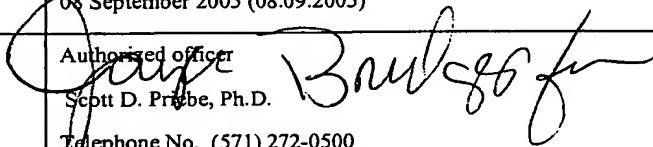
2. This REPORT consists of a total of 4 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of ___ sheets.

3. This report contains indications relating to the following items:

- I Basis of the report
- II Priority
- III Non-establishment of report with regard to novelty, inventive step and industrial applicability
- IV Lack of unity of invention
- V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI Certain documents cited
- VII Certain defects in the international application
- VIII Certain observations on the international application

Date of submission of the demand 13 July 2004 (13.07.2004)	Date of completion of this report 08 September 2005 (08.09.2005)
Name and mailing address of the IPEA/US Mail Stop PCT, Attn: IPEA/ US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	 Authorised officer Scott D. Pribe, Ph.D. Telephone No. (571) 272-0500

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US03/39236

I. Basis of the report

1. With regard to the elements of the international application:*

- the international application as originally filed.
 the description:

pages 1-32 as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____

- the claims:

pages 33-42 as originally filed
pages NONE, as amended (together with any statement) under Article 19
pages NONE, filed with the demand
pages NONE, filed with the letter of _____

- the drawings:

pages 1-3, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____

- the sequence listing part of the description:

pages 44-58, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
 the language of publication of the international application (under Rule 48.3(b)).
 the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in printed form.
 filed together with the international application in computer readable form.
 furnished subsequently to this Authority in written form.
 furnished subsequently to this Authority in computer readable form.
 The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
 The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- the description, pages NONE
 the claims, Nos. NONE
 the drawings, sheets/fig NONE

5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US03/39236**V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. STATEMENT**

Novelty (N)	Claims <u>1,3-40 and 43-70</u>	YES
	Claims <u>2, 41, 42</u>	NO
Inventive Step (IS)	Claims <u>1,3-40, 43-70</u>	YES
	Claims <u>2, 41, 42</u>	NO
Industrial Applicability (IA)	Claims <u>1-70</u>	YES
	Claims <u>NONE</u>	NO

2. CITATIONS AND EXPLANATIONS

Claims 2, 41, and 42 lack novelty under PCT Article 33(2) as being anticipated by Treco et al., US 6,200,778.

Treco discloses an isolated nucleic acid sequence (SEQ ID NO: 4) that comprises instant SEQ ID NO: 5. Treco discloses using part of its SEQ ID NO: 4 or 5 as targeting sequences for homologous recombinational insertion of an exogenous transcriptional regulatory sequence into the upstream regulatory region of an endogenous FSH-beta gene in isolated human, mouse, pig, cow, or sheep cells *inter alia* for the purpose of increasing expression of FSH-beta from the cell. (see entire document, especially Fig. 4, col. 3, lines 8-20. The resulting recombinant nucleic acid comprises nucleic acid encoding the human, mouse, pig, cow, or sheep FSH-beta operably linked to the transcriptional regulatory sequence, which itself includes response elements.

Claims 2, 41, and 42 lack novelty under PCT Article 33(2) as being anticipated by Harai et al.

Harai discloses the complete genomic sequence comprising the pig FSH-beta gene including instant SEQ ID NO: 3, the FSH-beta coding sequence and transcriptional regulatory region, which includes the endogenous response elements of the FSH-beta gene.

Claims 1, 3-40, 43-70 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest the sheep sequence set forth as SEQ ID NO: 1, or any sequence that is at least 80% identical thereto. Also, there is no suggestion in the art to make a recombinant nucleic acid as described in claim 43, where a nucleic acid encoding a ligand controllable receptor is included along with the recombinant FSH-beta expression cassette.

Claims 1-70 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US03/39236

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the questions whether the claims are fully supported by the description, are made:

Claims 2 and 54 are objected to under PCT Rule 66.2(a)(v) as lacking clarity under PCT Article 6 because claims 2 and 54 are indefinite for the following reason(s).

Claim 2 depends from claim 1, which is directed to an isolate nucleic acid comprising SEQ ID NO: 1 or a nucleic acid at least 80% identical to SEQ ID NO: 1. Claim 2 recites that the nucleic acid may comprise SEQ ID NO: 3 or 5. However neither of these two sequences are at least 80% identical to SEQ ID NO: 1, as required by claim 1.

Claim 54 recites "sheep mouse." It is unclear what a "sheep mouse" is.